THE Chemist

DECEMBER, 1945 VOLUME XXII, No. 12

Photograph Courtesy Crucible Steel Company of America

THANK CHEMICAL RESEARCH...
for the widened use of alloys!

Metals and alloys are in the headlines. No longer are they standardized commodities. For specialty steel makers have been called upon to develop metals with specific properties to do specific jobs.

As a result we have today alloys that are lighter, stronger, and with many qualities long hoped for but never previously achieved. These new alloys were used to help shorten the war. And now, in peace-times, they will render a much enlarged service.

Purity defined — not to "maximum limits" — but to the decimal by actual lot analysis. That's the story of the Baker's Analyzed label.

The widened use of alloys—the result of many newly discovered properties—is a tribute to chemical research. Thank the chemist also for his control methods to assure exacting uniformity of quality.

Baker's Analyzed C. P. Chemicals and Acids are tools used by the chemist both for product research of alloys and for their quality control. These laboratory reagents are the choice of the nation's finest chemists and are stocked by the leading laboratory supply houses of the country.

Here's the reason. They are dependable. They bear *the actual analysis on the label,* which enables the chemist to save time and obtain accurate results. So on your next order specify Baker's Analyzed when you send your order to your favorite laboratory supply house.

J. T. Baker Chemical Co., *Executive Offices and Plant:* **Phillipsburg, N. J.**
Branch Offices: **New York, Philadelphia and Chicago.**

"Baker's Analyzed"
C. P. CHEMICALS AND ACIDS

BAKER'S ANALYZED C. P. CHEMICALS ARE SOLD BY THESE REPRESENTATIVE LABORATORY SUPPLY HOUSES

The Chemist

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd Street, New York 17, N. Y.

Volume XXII December, 1945 Number 12

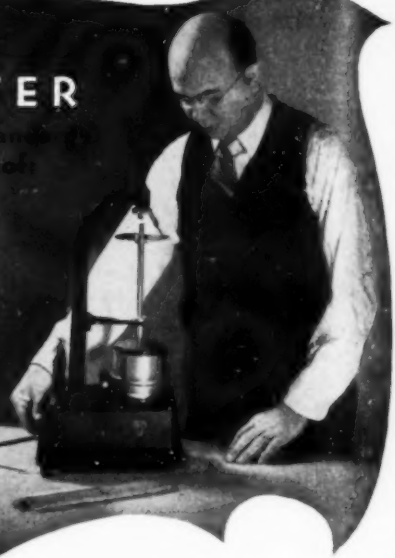
Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, $2.00 a year. Single copy, this issue $0.25.

Improved Gramercy Model

MACMICHAEL VISCOSIMETER

an American Industrial Standard for measuring viscosity of:

Paints
Varnishes
Greases
Flour
Gelatins
Ice Cream
Glue
Starches
Asphalts
Chocolate
Dairy Products
Dyes
Heavy Oils
Roofing Materials
Sugar Solutions
Etc., Etc.



The MacMichael Viscosimeter is the standard instrument used by chemists in leading manufacturing plants, to control viscosity of products, ranging from water to heavy glue.

The MacMichael Viscosimeter, regarded for many years as the standard instrument for viscosity measurements in many fields, has now been further improved by completely enclosing the motor, incorporating an electric governor to control motor speed, and by providing means so the sample can be heated while rotating.

The MacMichael Viscosimeter operates on the torsion principle. A plunger of standard dimensions is suspended in the sample by a torsion wire of fixed length. The sample is held in a cup, which is revolved at a constant speed on a motor-driven platform. The amount of torque imparted to the wire, depending upon the viscosity of the material, is read on a graduated disc attached to the spindle.

By standardizing against solutions of known viscosity in poises, the results can be interpreted in poises, i.e., absolute units of viscosity. The four torsion wires provided permit viscosity measurements up to 260,000 poises, or from water to stiff glue.

Certified wires are available as accessories; they provide the means by which results obtained on one wire can be expressed in degrees M of a larger or smaller wire by referring to the g-cm per M factors of the wires. These factors are indicated on the certificates accompanying certified wires.

The MacMichael Viscosimeter is furnished complete with four uncertified wires of 22, 26, 30, and 34 gauge. These cover practically the entire range.

MacMichael Viscosimeter, complete, for 110 or 220 volts A.C., D.C., **$190.00**

Manufacturers—Distributors

FISHER SCIENTIFIC CO.
717 Forbes St., **Pittsburgh (19), Pa.**
2109 Locust St., **St. Louis (3), Mo.**

EIMER AND AMEND
Greenwich and Morton Streets
New York (14), New York

Headquarters for Laboratory Supplies

RANEY CATALYST

FOR PREPARATION OF ORGANIC COMPOUNDS BY HYDROGENATION

Raney Catalyst is a finely divided alloy of nickel and aluminum made by a patented process. The material is inert and keeps indefinitely until activated by a simple chemical procedure. Its activity is dependable. There are no failures in preparation, if directions are followed. High yields are always assured. On account of the high activity of the catalyst many reactions proceed at normal pressures in ordinary laboratory vessels which would otherwise require high pressures and high temperatures. At least one hydrogenation preparation with a catalyst should be made by the organic chemistry student. Have him do it with Raney Catalyst.

Raney Catalyst is stocked in three sizes of convenient quantities in friction top cans, with complete directions for activation and use on the label. It keeps indefinitely.

23020A.	2 lb. can	Each	**$3.75**
23020B.	4 lb. can	Each	**6.75**
23020C.	10 lb. can	Each	**16.75**

CENTRAL SCIENTIFIC COMPANY

SCIENTIFIC INSTRUMENTS CENCO LABORATORY APPARATUS

NEW YORK TORONTO **CHICAGO** BOSTON SAN FRANCISCO

What MAKES *an* Idea *work?*

MEN with ideas have built the petroleum industry. But there may be a wide gap between the origination of a good idea and its successful application in service.

The idea may seem good but extensive research and experimentation may be needed to verify its usefulness . . . to establish the design of equipment . . . the proper procedures for practical use . . . the actual costs of operation.

Corollary research may be needed on such problems as recovery of solvents, control mechanisms, metering devices . . .

A complex patent situation may need to be cleared up . . . the potential demand studied . . . the idea promoted to potential users.

These are costly procedures. For want of them many a good idea has rested long years in the filing cabinet.

Texaco is proud, not only of the new ideas originating within its organization, but of the part it has played in developing the ideas of others to the point of useful service.

TEXACO DEVELOPMENT CORPORATION

A Subsidiary of The Texas Company

Technical Industrial Intelligence

Donald Babcock Keyes, F.A.I.C.

Director, O.P.R.D. War Production Board

Presented at the Honor Scroll Meeting of the Chicago Chapter, A.I.C.

Dr. Keyes was presented with the Honor Scroll by the Chicago Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, at a dinner meeting on October 26th.

WHAT are we asking as reparations from Germany?

The answer is, "Very little or nothing".

On the other hand, it is the opinion of many of us that we are entitled to reparations in the form of technical "know-how". Such reparations will cost the German people nothing. It will not affect their economy in any way, but it will materially affect ours if we are able to collect all technical information concerning developments which are of interest to our industries and see that they have a wide distribution throughout this country.

At the end of the first World War, we had practically no investigators in Germany until the records were destroyed or hidden, and it was impossible to obtain anything without a business agreement. The result was that certain companies in the United States were able to make satisfactory arrangements regarding the purchase of technical information, but the industry as a whole did not benefit. A small group of us in Washington three years ago felt that this error should be corrected, at the end of this second World War, and satisfactory means should be set up to collect and disseminate all valuable technical information that would be of real benefit to our American industry. In this group were Dr. Web-

ster Jones, of Carnegie Institute of Technology, the man who was called by Donald Nelson to create the OPRD; and an equally delightful character, the famous Sidney Kirkpatrick. These gentlemen, with the help of Mr. J. A. Krug, chairman of the War Production Board, and Dr. Vannevar Bush, head of the Office of Scientific Research and Development, were able to persuade the Secretary of War and the Secretary of Navy, a little over a year ago, that an organization should be set up for this particular purpose.

The logical way to set up such an organization would have been for Mr. Roosevelt to issue a directive setting it up as a civilian organization and asking the Secretary of War's office to implement it. Like so many things in Washington which are desirable and the method for their creation clear to the average man, it was not done that way. After considerable agitation and with the help of a great many influential people in Washington, pressure was brought to bear on the General Staff and the matter was given to the joint Intelligence Committee of the Joint Chiefs of Staff to create it. A committee known as the Technical Industrial Intelligence Committee, with neither funds nor authority, was given the privilege of coordinating all technical industrial investigations for the United States in Germany.

This committee consisted of eight members: one each from four military groups, namely: Army Intelligence; Navy Intelligence; Air Force Intelligence, and the Office of Strategic Services; and one each from four civilian groups, namely: Foreign Economic Administration; War Production Board; Office of Scientific Research and Development, and the State Department. The chairman, Mr. Howland Sargeant, was also the Foreign Economic Administration member, and thanks to his brilliance and indomitable energy, this committee acquired not only authority but also money. Special mention should be made of Mr. Crowley, head of the Foreign Economic Administration, for his willingness to cooperate and supply funds from his own budget before special funds could be obtained.

The organization on this side was briefly as follows: It consisted of Mr. Sargeant, a secretariat, and nineteen sub-committees covering the entire industrial field, the members of which were drawn from government agencies, chiefly from the War Production Board and from the Army, who had individuals directly connected with the War Production Board. These committees selected the targets and the investigators. On the other side, Mr. Sargeant and his coworkers created what is now a very excellent organization headed by George Powell, the European repre-

sentative. Particular credit should go to Mr. Powell, whose indomitable energy and tact carried the organization through some extremely difficult times.

Until recently there has been no coordinating group in Europe to control the various technical missions which at one time consisted of about 1500 different investigators. Only recently has the Army seen fit to supply the necessary facilities to carry on these investigations. Through the kindness largely of the Army Technical Mission, T.I.I.C. operators were permitted to go to targets. The diplomacy shown by our European head, Mr. Powell, and his immediate aides, became a very vital factor in the success of the venture.

Approximately 450 investigators, many of them with national and international reputations, have gone over for this organization. Literally thousands of reports have been made. Many of them were made under very difficult and strenuous conditions. A book could be written on the interesting experiences of these men who were willing even under shell-fire and at the risk of their lives while the war was still going on to do everything in their power to investigate the modern technical developments of Germany.

So much for the collection of the material. This material of course would be utterly worthless if it was not properly distributed. Thanks again to Mr. Krug, chairman of the War Production Board, it was found possible to create what was known as the Enemy Technical Reports Committee of the WPB, who were willing to take the responsibility of accepting unclassified summary reports from T.I.I.C. investigators and distribute them to industry in general. Their main thought was to have them released for publication in order to obtain the widest possible distribution.

Finally, after months of arguments and with the help of American industry, the matter was brought to the attention of the President, and Mr. Truman issued a special directive for the declassification and distribution of these reports through the Department of Commerce. The man in charge of this work is Mr. John C. Green, formerly Chief Engineer of the National Inventors' Council, who has our sincerest sympathies, because it is a gigantic task, not only in the distribution of the reports from the American investigators, but what is even more pertinent, the distribution of microfilms and photostats of valuable German documents.

There are literally hundreds and perhaps thousands of tons of documents already collected on the Continent, in England, and in the United States. Attempts are now being made to review this mass of material and select the portions that should be of interest and value to American industry. Mr. Green's office will make

available copies of such material.

The Technical Industrial Intelligence Committee, like many of our war agencies, has been liquidated and in its place has been set up in this country a line organization known as the Technical Industrial Branch of the Joint Intelligence Objectives Agency. This latter agency, another creation of the Joint Intelligence Committee of the Joint Chiefs of Staff, is supposed to handle not only technical intelligence, but also economic political intelligence in Germany. The military director is Colonel Gruhn, and the civilian deputy is our efficient and able friend, Howland Sargeant. The nineteen sub-committees have disappeared and in their place are nineteen individuals selected from the permanent government agencies in Washington. The Foreign Economic Administration is still supplying the money for the Technical Industrial Intelligence, that is for the staff in Washington and for the European organization.

The present European set-up has also changed. It no longer operates through the Combined Intelligence Objectives Sub-committee, because the latter has been liquidated, but is the Industrial Division of the Field Information Agency, Technical, commonly known as F.I.A.T., a group that was set up some months ago to coordinate all non-military technical intelligence in Germany. This latter agency used to be combined with the British, but now operates under the American theater commander. At the present moment there about 150 investigators plus 100 staff members, executives, clerks, secretaries, etc., a total of 250 in London and on the Continent, which are involved in this Technical Industrial Intelligence.

To sum up the activities of the Technical Intelligence I can say without fear of contradiction that our men have done a truly wonderful job and the results now coming in are such that the industrial world will soon appreciate what they have accomplished. It would seem to me that we could profitably continue detailed investigations for some time to come, for the reason that it is the detail that has been found to be important rather than a brief description of some new development. It isn't often that an entirely new process discovered in Germany can be used as such in this country. On the other hand, it is very rare that a detailed investigation of some new development does not disclose certain features that are of real importance and can be applied effectively to other processes in the United States.

It is my personal opinion that these investigators have shown this country how technical information can be acquired from another country and utilized here on a scale far ahead of anything even hoped for before. It is also my opinion that

the procedure set up should be modified and continued in peacetime. We have never had a peacetime technical investigating group for the country as a whole. I believe such a thing is feasible. The lessons we have learned should make it possible to set up a practical organization along similar lines.

There is a movement on foot in Washington right at the moment to ask Congress to permit setting up, or to continue, this Technical Intelligence under the Department of Commerce. It should be remembered that of all the old line agencies, the Department of Commerce is closer to industry than any other. As an industrial matter, I feel that the suggestion that has been made, and that will soon be brought before Congress, has a logical basis, and I hope it will be acted upon favorably.

Keyes and Chemicals During World War II.

Lawrence Brown

Assistant Director and Reconversion Officer, Chemicals Bureau, W.P.B.

A condensation of a talk given at the Honor Scroll Meeting of the Chicago Chapter, A.I.C.

THE year of 1941 was the era of defense. It was an anomalous situation in which we were unofficially directed to wage war, but offically bound by the fiction of defense and the legal responsibilities of neutrality. Donald Keyes must have been a brave man to step into that situation and leave, even on loan, the security of the academic life for the jungle of Washington bureaucracy. Leon Henderson had asked him to take charge of the chemical work for OPACS. Despite his vague assignment and the confused background, Keyes undertook the job.

At that time there was in the OPM a chemical group which was confined to assisting direct military procurement. Its operation and its policies stopped at the point where the Army obtained what it immediately needed or requested. Keyes saw that the inevitable war could not be waged successfully with such a limited point of view, and that it would be necessary to go far into the dangerous field of economic plan-

ning, if the chemical industry were to perform the essential war function that would be demanded of it.

In the face of all the checking paraphernalia of bureaucracy and the requirement of having to do everything on an official peace-time basis, Keyes organized a small group of men under Henderson, to obtain necessary information and establish the background for future industrial controls in the chemical industry.

His theory of political economy was simple. The government alone was to decide what was to be done for war production. Beyond that, any company was to be protected, so far as possible, in its relative pre-war competitive position, against, again so far as possible, the hazards of war and the raids of more fortunate competitors. This theory of war-time government controls might not have received explicit Congressional sanction, but it was a theory justified by practice — it worked. It obtained huge war production without leaving behind ugly situations to be aired with bitter recrimination.

Keyes' organization started in with a thoroughness that was almost brutal. By the end of 1941, it had brought under control, either by direct order, or by action from the Chemicals Section of OPM, such key industrial chemicals as chlorine, phenol, ethyl alcohol, methanol, formaldehyde, phosphate plasticizers, and cotton linters. Events later showed that this was the necessary foundation for the enormous production requirements of war.

Keyes also helped the scientists. Despite the concentration on the immediate problem of making something to shoot, Keyes pushed through orders protecting the production of scientific instruments and assuring their availability for research.

There was one thing, however, that he could not count on — the upper-strata political conflicts which are likely to upset long-range operation in Washington. The whole section of OPACS through which Keyes was operating, was suddenly transferred out from under Henderson and placed as the Division of Civilian Supply in the OPM. As a result, Keyes' official organization came to a rapid and inglorious end. Interestingly, the men he had hired moved into the existing chemical organization in the OPM and became an influential group. His men as individuals succeeded in accomplishing practically everything that Keyes had designed.

The organizational shakeup left Keyes as an individual at loose ends. He held the post of consultant but it is not on record that he was ever consulted. However, one of his experiences, during his operations with Henderson, apparently suggested a valuable idea to him.

That experience was the synthetic rubber fight of early 1942. Imme-

diately after Pearl Harbor, a tremendous synthetic rubber program was announced. It was based practically entirely on petroleum sources. When this was announced there were a number of technical men worried about it. Few were more worried or more effective in translating their worries into action than Keyes.

The announced program called for production from butane, but there was no butane and it seemed unfeasible to produce the necessary quantities. There was a practicable method of producing butadiene from butylene, but had never been tried on a large scale. Worse still, butylene was clearly going to be required in almost unlimited quantities for aviation gasoline.

In a perfect society, technical problems of this nature would be resolved by technical people. But in government such decisions are not arrived at by such a simple method. In the structure of our government many men have the power to say "No", at least for a time. When, on top of normal governmental inertia, you introduce powerful and determined pressure by individual interests, you have a situation in which action is nearly impossible. To add to the confusion, it is always possible to get contradictory technical statements, particularly when technicians are talking to non-technicians. We had, therefore, a perfect bedlam of pseudo-technical advice being handed to every prominent politician in the city. Keyes was not the only man who was influential in the problem but he was definitely one of the successfully influential.

He came to the conclusion that the only way we could obtain adequate supplies of rubber without grounding our air force was by the use of alcohol. He did not wait for the acceptance of this conclusion by the whole paraphernalia of bureaucracy before he put it into effect. He proceeded, long before alcohol had been adopted as an official program, to obtain the necessary supplies of alcohol.

The sequence of dates is interesting. It was not until May 1942, the eve of the convening of the Baruch Committee, that the rubber authorities finally decided to build three large alcohol-butadiene plants. Yet in February, 1942, Keyes' organization put through the seizure of the liquor industry in order to stockpile alcohol. He had already, in the fall of 1941, taken over control of industrial alcohol.

Despite all the publicity on the Baruch Committee and the eminent rubber directors which the country has since employed, the program as decided on in May, 1942, is the one that has been carried out substantially unchanged.

It was this memory of the babel

of technical voices in the rubber controversy that lead him to take his next course after the dissolution of his old organization. In 1942, he first talked to me about organizing a panel of independent technical men to whom we could refer disputed technical matters. These technical matters in the government are rarely disputes over technical matters. They are actually financial or political disputes in a technical disguise. The Referee Board would serve primarily to strip off the technical camouflage and make it possible for us bureaucrats to decide on the real issues.

The idea appealed to Donald Nelson, and the Referee Board was established. Its life was short. The idea seemed so good that it was taken up and broadened. The War Production Board extended it to all industrial fields, organizing the Office of Production Research and Development and absorbing Keyes and his Referee Board into it. Keyes stayed here in charge of chemicals from November, 1942, to July, 1944, when he succeeded to the directorship of the whole organization.

The chief war contributions of the Chemicals Section of the Office of Production Research and Development lay in alcohol and penicillin. Keyes' work on alcohol was the logical successor to his work in helping to establish alcohol-rubber. The German submarine campaign in 1942 had cut off tanker operations north of Hatteras, thus closing the great seaboard alcohol plants. It became necessary to obtain alcohol from grain, but there was insufficient corn, and the seaboard plants lacked facilities for handling grain. Keyes' Alcohol Advisory Committee under the OPRD, with the valuable cooperation of the Department ofAgriculture, devised techniques for using wheat in the western plants which had grain equipment. They likewise solved the technical problem of using a new product, granular wheat flour, in the seaboard molasses plants. As a result we produced approximately 180 million gallons of alcohol from wheat.

Likewise with the help of key men from Agriculture, Keyes pushed through the construction of plants producing alcohol from sawdust and from waste sulfite liquor from the paper mills. These latter were of such small relative size that their value is primarily for the future.

Keyes' work on penicillin was less spectacular but no less valuable. Original research on penicillin and its development to pilot plant stage had been carried out by the Department of Agriculture under the Office of Scientific Research and Development, but the problem of carrying this on into mass production was complicated. There was the problem of obtaining a better strain of penicillium notatum, and this was solved so that the plant capacity was in-

creased many-fold. There was also the problem of improving the process of extraction. At the rate of loss of solvent in early operations it would have been impossible to produce the present quantities of penicillin because of inadequate supplies of solvent.

Two other outstanding chemical jobs of the OPRD were of great service to the war. One was the speeding of DDT production just in time to catch the epidemic at Naples. The other OPRD job was the production of CS. Airplane technicians will wrangle over that until it is forgotten, but the fact remains that during the terrific pinch of D-Day air operations, it was CS that was dumped in the tanks.

Keyes carried on another private war for the benefit of the scientific world. This was the draft deferment of scientific personnel, about which nothing was done until Keyes organized his Technical Deferment Advisory Committee.

Keyes became director of the OPRD in July of 1944, so that his technical contributions were by no means applied to the chemical industry alone. OPRD spent some $9,000,000, no mean sum as government research expenditures go, but a small investment for the value of its work.

With the collapse of German resistance, Keyes added to his other work the organization and direction of obtaining technical chemical information from Germany and arranging for its dissemination in the United States. This work is not as yet completed and an evaluation of it must wait.

Keyes was basically the organizer of a great enterprise. He was not the man on whom the attention of the public, or even of the operating parts of the industry, was ever focussed. Instead he saw the vital things in his field that had to be done, and set to work in his own quiet way to get men started at them, to get things organized and moving along.

Corning Expands in South America

Corning Glass Works has purchased a substantial interest in Cristalerias de Chile, largest glass manufacturer in that country, according to an announcement by William H. Curtiss, vice president and secretary of the company, who emphasizes that the majority control of the Chilean concern is to be retained by the original owners in South America, while Corning will be represented on the Board of Directors. In 1943, the Corning Company acquired an interest in Cristalerias Rigolleau of Buenos Aires, and last year an investment was made in Vidraria Santa Marina of Sao Paulo.

Keyes and His Achievements

Albert L. Elder, F.A.I.C:

Corn Products Refining Company

A condensation of a talk given at the Honor Scroll Meeting of the Chicago Chapter, A.I.C.

DONALD KEYES liked variety even in his college days for he went to New Hampshire for his B.S. in 1913, his M.S. at Columbia in 1914, and then to California for his Ph.D. under G. N. Lewis in 1917. After a brief period of chemical engineering with Beckman and Linden during 1917-1918, he went to U. S. Industrial Alcohol, where he became director of research in 1924. Two years later he moved to Urbana to take charge of chemical engineering.

Hundreds of students have come under the influence of Keyes, as a teacher. That this influence has been outstanding is demonstrated by the many fine positions held by Keyes' men. He has always been more interested in the thorough training of a few students rather than the mass production of many.

A brief search of the literature proves that Keyes is a prolific writer. During the past thirty years he has published at least sixty articles, a book, and obtained several patents. The many topics on which he has done research have given him the background for the work for which he is being honored. He has taken in stride such problems as sulfates of samarium, aniline-hexane systems, cyanogen, automobile lacquers, manufacture of magnesium, fractionation of petroleum, anti-freeze compounds, anhydrous ethyl alcohol, partial oxidation of alcohols, electrodeposition of metals, ice manufacturing, free energy changes, third components in fractional distillation, oxidation of coal, recovery of sulfur dioxide, and surface tension of alcohols.

Keyes' interest in technical societies dates back many years. He has always given freely of his time to educational work and professional committees of the numerous societies to which he belongs.

It has been said that this war represented the commercial development of the pilot plants of the last war. Keyes knows how to evaluate enterprises in either the laboratory or the pilot plant. Thus, those who knew him expected him to be looking years ahead to help win the war which was definitely on the way.

In September, 1941, he went to Washington as head consultant for Civilian Supply and Civilian Allocation of O. P. A. In June, 1942, he became head consultant for the Materials Division, Chemicals Branch of O.P.M., to set up the Referee Board which was to judge competing processes for substitutes materials, new processes, and better processes.

In December, 1942, he became chief of the Chemical Industrial Branch of O.P.R.D. In July, 1944, he was made director of O.P.R.D., and on his trip abroad last spring, he acted as special consultant for the War Department.

There was certainly no technical man in Washington who knew how to keep an ear to the ground better than Keyes. Men in industry came to him with their problems. When they could not find someone they turned to Keyes who usually knew the person, where his office was yesterday, where it was moved to today, and where the man should go to find him six weeks from now. Keyes knew the men at the top and those at the bottom, and he had that rare faculty of being able to say "No" and yet leave one with the feeling that he had done him a favor.

Keyes is versatile. In one day he would let O.P.R.D. contracts for the extraction of penicillin, the development of DDT, spectographic and chemical standards analysis, mica splitting, synthetic jewel bearings, laminating ship timbers, and the production of quinidine.

When it appeared that the Government was going to sacrifice the last of the young technical man power, Keyes refused to accept defeat. He soon realized that no small part of the technical draft deferment failure was due to the fact that Washington was not qualified to pass on the deferment of technical men. A chemical engineer, chemist, or drug store clerk were one and the same in the eyes of many in Washington. Keyes urged that the Government use technical men to pass on the qualifications of technical men and he was instrumental in organizing the Technical Deferment Committee of W.P.B. and he served as the first chairman of the Committee.

The work of the "TIIC" Committee (Technical Industrial Intelligence Committee) is still unfinished, but Keyes was vice chairman of this committee.

Many people have said, "Now, just what did Keyes do in Washington?" Perhaps the answer will be "Not much for which he will get credit". Keyes was a combination of Bernard Baruch and Scattergood Baines for the chemists and chemical profession. He was determined to get things done and he had that happy faculty of efficient utilization of the indirect approach. He liked

to get things started and once organized he moved on to something else.

High officials of the Armed Forces have said that the war with Japan could have been won without invasion or the use of the atomic bomb. May I add, that without technical equipment, our men could not have won at all, and without men like Keyes in Washington we would not have developed the technology needed, nor preserved the technical man power, to make the implements of war.

( )

Nelson Appointed Manager

G. B. Hafer, general sales manager of J. T. Baker Chemical Company, Phillipsburg, N. J., announces that Gerald P. Nelson is now manager of the company's Philadelphia Office. In 1943, he was granted a leave of absence to assume duties as a captain the Army Transportation Service.

Alexander Silverman, F.A.I.C., head of the Department of Chemistry of the University of Pittsburgh, completed forty years of service as a full-time member of the faculty this September. He was recently appointed a member of the Committee on Rules of the Ceramic Educational Council of the American Chemical Society.

To Defend Patent System

The National Patent Council, which was organized by a national group of smaller manufacturers to defend the United States Patent System, has as its president John W. Anderson, of the Anderson Company, Gary, Indiana, and as executive vice president, John C. Patterson, former director of the patents and industrial research department of the National Association of Manufacturers. Headquarters of the Council are at Gary, Indiana. Offices will be opened in New York and on the Pacific Coast.

Chemical Exports Encouraged

The Chemical Unit of the United States Department of Commerce suggests that manufacturers increase sales promotion activities, in order to promote greater foreign sales of American chemicals. Exports of industrial organic chemicals, including sulfur, but excluding insecticides, fertilizers, pigments, and specialities, were valued at approximately $50,000,000 in 1944, and this is expected to be materially increased with sufficient export promotion.

Maurice H. Bigelow, F.A.I.C., Major, C.W.S., is in Frankfort, Germany with the Army of Occupation. He is engaged with production control of detergents, plastics, solvents, and coating-compounds.

Corn Industries Encourage Basic Research

Norman F. Kennedy

Director of Research, Corn Industries Research Foundation

THE many contributions made by our industrial, government, and university laboratories, to the successful conduct of the war, have created an impressive awareness on the part of the public of the value and necessity of research in promoting national security.

The impressiveness of the actual contributions themselves has tended to overshadow and underemphasize the extent and virtues of the research processes which made those contributions possible. It would have been difficult, if not impossible, to have produced the stream of new products and new developments so useful in our war effort, had we not created reservoirs of scientific knowledge and information in the period prior to the war. Thus, an extensive body of peacetime research is a necessary precursor to research devoted to war.

Similarly, when any new product reaches the stage of human usefulness, either in war or in peace, it has behind it many long-term accretions of knowledge as well as the application of many specialized skills. Thus, the true research process includes the creation of fundamental and theoretical knowledge as well as the application of that knowledge.

The Corn Industries Research Foundation has believed for some years that the creation and the implementation of a comprehensive research process was as important as the products which might be derived from it. The Foundation, supported by eleven member companies, comprising all those concerns employing the wet milling process to convert a portion of our largest crop—corn—into many products for food and industrial use, therefore undertook the task of expanding that vital part of the research process primarily concerned with the creation of new fundamental knowledge and information as to the basic chemical nature of the raw material employed by the industry.

The application of that knowledge into new products was believed to be the competitive function of the individual members, so that the Foundation itself has been solely engaged in creating, maintaining, and developing instrumentations to carry out

a cohesive and coordinated long-range program of fundamental research as its contribution to the gross research process.

It was also felt that the greatest possibilities for the future expansion of the industry and for a greater utilization of our major cereal crop, lay in the chemical field. The major deterrent to expansion in that field was the lack of knowledge of the molecular structure of starch, the main ingredient of the corn kernel.

Inasmuch as molecular structures are the building blocks of the chemical industry, the solution of the mystery of the starch molecule with all its complexities called for a major offensive.

Some ten years ago, the corn refining industry, already the largest producer of starch for food and industrial uses, embarked on a pioneer experiment to determine the fundamental chemical structure of starch.

The mechanics of this experiment involved enlisting the aid of the ablest men working in the field of fundamental carbohydrate chemistry, and the establishment of devices to bring the fundamental investigator and his work into a close and intimate relationship with the applied chemist in industry.

A series of research fellowships, financed by the industry, were established in leading universities and government laboratories.

These fellowships are approaching the problem from all angles. Many specialized skills are being employed. In the laboratories of the United States Public Health Service at Washington, Dr. Claude S. Hudson, internationally-known carbohydrate chemist, has been working on the molecular structure of starch through a study of some of its entities such as the Shardinger dextrins. Dr. Charles O. Beckmann, professor of chemistry at Columbia, is observing the size and shape of the molecule by means of the ultra-centrifuge. Dr. Mary L. Caldwell, also at Columbia, is studying the effect of enzymes on starch structure.

At Washington University, St. Louis, Dr. Carl F. Cori is attempting to find a solution through synthesis of starch from sugar. Dr. Harry G. Day of Indiana University is studying enzymic degradation or breakdown of starch. The U. S. government laboratory at Peoria, Illinois, is looking at a supposed branching of the molecule. Dr. W. Z. Hassid at the University of California is attempting synthesis with different types of organisms. At the Massachusetts Institute of Technology, Dr. Richard S. Bear is employing the electron microscope and the x-ray tube in his studies on this molecular structure. Dr. Melville L. Wolfrom from Ohio State University is also trying to demonstrate a branched-chain structure with spe-

cial chemical tools of his own design.

At Iowa State College, Dr. Ralph M. Hixon not only uses both physical and chemical methods on this structure problem but applies the genetic approach as well. Thus the different tools and skills of the plant chemist, the organic chemist, the physical chemist and the geneticist are brought to bear.

These men, among the leaders in carbohydrate chemistry, are working independently, yet their programs are coordinated by a device created by the Corn Industries Research Foundation: the Annual Starch Round Table. From university, government, and industrial laboratories leading scientists meet at the Round Table's four-day session. Here the entire starch program is reviewed in seclusion and comfort. Work of the previous year is brought into objective focus, new problems articulated, unprofitable approaches abandoned, conflicts of opinion ironed out.

Before the Round Table provided this annual forum, the chemist, arguing his differences in the slow-paced scientific literature, often saw a year elapse before differing viewpoints were harmonized. Thus the effect of the Round Table has been to accelerate progress.

In addition to the foregoing, the Foundation has collected and listed in the form of a bibliography all the pertinent literature on carbohydrate chemistry from the year 1811 to the present. This compilation, organized and kept up-to-date in card sets, has been given to many scientific libraries. As another contribution to the cause, the Foundation has granted a long-term fellowship to Dr. Richard S. Bear at M.I.T. for the purpose of bringing together in a monograph all the old and new concepts of starch chemistry. Dr. Bear's work is expected to be the definitive document of the branch of science it represents.

What has this organized research process accomplished to date? Those who are part of it believe that more progress has been made in starch chemistry in the past eight years than in the previous century. At least two fractions of starch have been identified. In one, the molecules are laid down in straight chains in the granule. In the other the chains are branched, but further elucidation of the branching is needed. Knowledge of the useful properties of the fractions has been enlarged, hence the field of commercial application has been extended.

But a large part of the mystery remains. Its solution is still a long way off. What the future will bring in terms of new products is not known. The only certainties are that the research process is soundly conceived and that it will continuously be applied in practical contribution to science, industry, and agriculture, and to society at large. In this work

full freedom of thought and action has been encouraged. No controls have hampered the chemist's complete independence.

Thus, the Foundation in this fusion of fundamental and applied research, has in essence created a comprehensive research process, tailor-made to the needs of the industry. Because of obvious man-power difficulties during the war period, the progress of the process was inevitably restricted although the structural organization has been maintained.

It is to be regretted that those entrusted with the military and man-power management of the war effort, did not have sufficient clarity of vision to realize the necessity of maintaining our gross national research facilities at full strength. Due to this absence of an enlightened selective-service policy, a dangerous sterilization of our entire national research organism has occurred. Not only have the reserves of fundamental research knowledge been used up but also no provision at all has been made for their refurbishment.

Scientific faculties and research groups in the universities have been depleted; graduate students are conspicuous by their absence; scientific men are diverted into occupations having no relation to their skill or training, and no provision is apparent for injection of new blood at the youth level. A period of stagnation in our research activities seems inevitable. It looks as though there would be a hiatus of between five to eight years before a normal flow of well-trained scientists can be assured. On top of this situation are the problems of reconversion, putting an ever greater burden of demand for men trained in special skills. And no promise of relief has as yet been made.

It is hoped that one day our military and political leaders will come to the understanding that peacetime research is wartime research, that the full preservation of the facilities of research represents sound national policy and is a prime requisite of our national security both in war and in peace.

Meanwhile, the Corn Industries Research Foundation intends to pursue its present activities with as much vigor as conditions permit. The farmers who grow our raw material and the consumers of our products demand it as much as do the members of the industry.

Foster D. Snell, Inc., have prepared a new booklet describing their engineering services. Readers of THE CHEMIST may receive either "Engineering Services" or "The Consulting Chemist and your Business" without charge, by request to the firm at 305 Washington Street, Brooklyn 1, New York.

Current Statistical References On Chemicals

Louis N. Markwood, F.A.I.C.*

Acting Chief, Chemical Unit, Bureau of Foreign and Domestic Commerce

THE Chemical Market Research Association, which started in a modest way several years ago, may be destined to serve as an important factor in the expansion of the American chemical industry, and indirectly, all industry.

The word "Research" in the title of this group recognizes that the development of chemical markets is not a routine job, but one requiring discrimination and judgment.

It would be a falsity to assert that the market research in vogue today is not well served by Government statistical agencies. To the contrary, a mass of data emerges regularly from these sources and is available to all interested. It is not the quantity nor the quality of the data that I would discuss, but rather their organization and presentation, to suit the needs of a fast-moving, streamlined era.

The basic facts of chemical economic research are now sought out at the expense of much energy and time. This slow, unsatisfactory process may have been good enough during the dull years of the pre-war era, but post-war times demand a faster tempo, with even greater coverage and surer results.

Comparison between scientific or technical research on the one hand and market research on the other provides an answer to the modus operandi which I would suggest as a forward step in the art and science of developing new markets. When

*Presented at a meeting of The Chemical Market Research Association.

the laboratory chemist tackles a problem, he first turns to *Chemical Abstracts,* with its wealth of well-organized scientific facts.

The marketing specialist, however, is served by no single medium which keeps him informed of the scattered releases issued by governmental offices, pertaining to the economics of chemicals. Such a service is precisely what he needs to advance his art and his performance. Especially if he comes to the job new, the marketing man may overlook an important source of data, not knowing which Government agency compiles the figures. But whether new or well-tutored, the advantages to such a worker of an abstract service dealing solely with statistical and economic matters, are too obvious to require detailed elaboration.

Therefore, what I wish to propose is a periodic abstract service to cover governm ntal economic releases on chemicals. This service would provide economic and commercial information paralleling that afforded by scientific abstracts, which for many years have been the tool and reliance of the scientist.

When a scientific article carrying the results of new research on chemicals appears, the salient details are published promptly in *Chemical Abstracts.* Similarly, when the government releases facts of a statistical nature, these should be promptly brought to the attention of industry in a specific manner such as will lead to the widest dissemination and the greatest usefulness — by an abstract service. This service would identify the commodity, the source of the information and describe the nature of the statistics — e.g., production, imports, exports, stocks, sales, consumption, shipments, etc. In accordance with sound abstracting procedure, an appropriate digest of the figures would comprise the essence of the abstract.

Supplied in this way with a review of current statistics on chemicals, the marketing specialist could quickly establish the factual horizon of his problem and proceed from there. He would not long remain in doubt as to the extent of statistics available, nor commit an error by possibly overlooking the one source of data meeting his problem. He would not need to know which government agency collects the data; that would be stated in the abstract, for any follow-up.

There is another reason favoring an abstract service of this kind. With the war over, there may be a shift in the issuance of statistics from one agency to another. Any such realignment may temporarily cause some interruption, possibly confusion, during the transitional period from war to peace. It is therefore more important than ever that industrial organizations be provided with a dependable service on statistics.

The principal collecting and issu-

ing agencies so far as chemicals are concerned are the Bureau of the Census, the Bureau of Mines, and the Tariff Commission. There are others, however, each performing a service that is vital to some branch of chemical industry. A break down of releases is shown in Table 1.

The Bureau of Foreign and Domestic Commerce, while not a collecting agency in the sense that the authorized collecting agencies operate, issues analytical reports based upon official figures. Included herein are reports of the Industrial Reference Service, such as Synopses of Information, and material in the Bureau's periodicals — *Domestic Commerce, Foreign Commerce Weekly,* and *Survey of Current Business.* These reports and periodicals are available on a subscription basis. In addition, the Bureau issues a *Monthly Industry Report on Chemicals and Allied Products.* This report, available without charge analyzes industrial trends in some half dozen major branches of the chemical industry. It represents a revival of a similar report issued before the war, and since its reinstitution this year, appears to have won whole-hearted acceptance by the industry.

The Bureau of Foreign and Domestic Commerce, in its official capacity to foster, promote, and develop the business of the nation, can play an important role in the project suggested by participating in its organization and serving in an advisory capacity. Having a background of statistical and abstracting experience, specialists in the Bureau could readily develop a working procedure. After the groundwork has been laid, the enterprise could either remain in governmental hands or might conceivably be added to the functions of the American Chemical Society, whereby a section would be added to *Chemical Abstracts* to contain these economic digests. The latter arrangement would of course have to be approved by the Society.

While this suggestion limits the scope of the material to be abstracted to governmental releases, there is no reason for not ultimately extending the idea to non-governmental reports of an appropriate character. The various trade associations issue reports which, while not the result of original surveys, are nevertheless serviceable in market research. These ought not be overlooked.

If the idea of an abstract service covering the field of chemical statistics bcomes a reality, I feel that such action will mark a milestone in the history of chemical market research. The chemical industry during the war period has learned to value the statistical phase of its affairs more than ever. Now is the time to establish this phase on a solid basis, with attendant benefits to industry.

Table 1. Federal Statistical Releases On Chemicals

Department and Bureau	*Commodity or Report*	*Period*	*Nature of Statistics*
Agriculture			
Agricultural Economics	Beeswax	Annual	Production, prices
	Casein	Monthly	Production, stocks
	Fats & oils situation	Monthly	Prices, stocks, consumption
Agricultural and Industrial Chemistry	Steam-distilled wood naval stores	Monthly	Production
	Naval stores	Monthly	Stocks
	Naval stores	Quarterly	Production, distribution, consumption, stocks
Plant Industry, Soils & Agricultural Engineering	Fertilizers	Irregular, latest for year ending June 30, 1943	Consumption
Commerce			
Census, Industry Division	Census of Manufactures — includes hundreds of commodities broken down into subgroups, such as:	Biennial (1939 latest)	Production, value, number of establishments, etc.
	Paints, varnishes & lacquers		
	Colors & pigments		
	Insecticides & related chemical compounds		
	Soap & glycerin		
	Wood naval stores Etc.		
	Superphosphate	Monthly	Production, receipts, disposition, stocks
	Animal & vegetable fats & oils covers glycerin	Monthly	Production, consumption, stocks
	Animal & vegetable fats and oils	Annual	Production, etc. quarterly for 5 yr. period
	Paint, varnish, lacquer & filler	Monthly	Value of sales
	Plastic paints, cold-water paints & calcimines	Monthly	Sales, by quantity & value
	Sales of lacquer	Quarterly	Sales, by quantity & value

Census, Foreign Trade Division	Foreign Commerce and Navigation	Annual (1942 latest yr. available)	Imports, exports
	General imports into U. S.	Monthly	Commodity by country
	General imports into U. S.	Monthly	Country by commodity
	General imports into U. S., by air	Monthly	Commodity by country
	U. S. imports for consumption	Monthly	Commodity totals
	U. S. exports of domestic merchandise	Monthly	Commodity by country
	U. S. exports of domestic merchandise	Monthly	Country by commodity
	U. S. exports of foreign merchandise	Monthly	Country of destination by commodity
	U. S. exports of domestic and foreign merchandise	Monthly	Commodity totals
	U. S. exports of domestic & foreign merchandise under Lend-Lease program	Monthly	Commodity totals
	U. S. exports of domestic & foreign merchandise under Lend-Lease program	Monthly	Commodity by country
	U. S. exports of domestic & foreign merchandise under Lend-Lease	Monthly	Country by commodity
	U. S. exports of domestic & foreign merchandise under UNRRA	Monthly	Country by commodity
	U. S. exports by air of foreign & domestic merchandise	Monthly	Commodity by country

Federal Reserve System	Bulletin	Monthly	Indexes of production
Interior			
Mines	Minerals Yearbook — covers numerous chemicals produced by the mineral industries	Annual	Production, consumption, sales, etc.
	Mineral Market Reports — cover certain chemicals produced by the mineral industries.	Monthly, annual	Production, consumption, sales, etc.
Fish & Wildlife Service	Vitamin A Report	Monthly	Production, stocks, shipments, etc.
	Canned fish & byproducts — covers liquid glue and other by-products	Annual	Production
Interstate Commerce Commission	Freight Commodity Statistics—covers several chemicals	Monthly	No. of carloads, tons, revenue
Labor			
Labor Statistics	Monthly Labor Review	Monthly	Prices
	Wholesale prices on chemicals and allied products	Weekly, press releases	Group index
	Wholesale prices on chemicals and allied products	Semi-annual & Monthly	Prices, indexes
	Employment & pay rolls	Monthly	No. workers, indexes
	History of prices during war years	Irregular	
Tariff Commission	Synthetic organic chemicals	Annual	Production, sales
	Statement No. 2865 — covers dyes, aromatics, medicinals, intermediates, & other coal-tar products in paragraphs 27 and 28		

	of the Tariff Act of 1930	Semiannual	Imports
Treasury			
Internal Revenue	Comparative Statistics on domestic alcohol	Monthly	Production, withdrawals, stocks, etc.
	Statistics on alcohol	Annual	Production, withdrawals, stocks, etc.
War Production Board with Bureau of Census	Facts for Industry, Series 6-1, with supplements — covers about 53 chemicals, chiefly inorganic	Monthly	Production, consumption, stocks
Tariff Commission	Facts for Industry, Series 6-2, covers 25 synthetic organic chemicals	Monthly	Production, consumption, stocks
Bureau of Mines	Facts for Industry, Series 6-3, covers 12 chemicals, chiefly metallic salts	Quarterly	Production, consumption, stocks
	Facts for Industry, Series 6-4, animal glue & gelatin	Irregular	Production, consumption, stocks

Funds for Scientific Institute in Palestine

At a dinner held at the Waldorf-Astoria Hotel on November 27th, a gift of $1,000,000 to establish a scientific institute in Rehovoth, Palestine, was presented to Dr. Chaim Weizmann, president of the Jewish Agency for Palestine.

Heyden Chemical Corporation, New York, N. Y., announces that Mr. S. Askin, industrial relations director, has now been appointed assistant secretary.

Sutherland with Bjorksten

Kenneth Sutherland has joined the staff of Bjorksten Laboratories, Chicago, Illinois, as chemist. Mr. Sutherland was previously associated with Turco Products, Inc.

Foster D. Snell, Inc., Adds to Staff

Miriam Lauren, formerly with the Rockefeller Institute for Medical Research, and Gerald M. Compeau, recently research analytical chemist with the Colgate- Palmolive-Peet Company, have joined the staff of Foster D. Snell, Inc., Brooklyn, N. Y.

Research Expansion Programs

Monsanto Chemical Company: Dr. Charles Allen Thomas, F.A.I.C., vice president in charge of research, announced that Monsanto will construct a $1,500,000 synthetic caffein production plant at St. Louis, which will be the first in the United States to attempt large-scale manufacture of synthetic caffein. The process was developed by chemists in the company's research laboratory at Dayton, Ohio.

Hercules Powder Company: The largest expansion in its $30,000,000 program of construction of new plants, will be in the cellulose products department to increase the production of cellulose derivatives used in the lacquer, plastics, rayon and other industries. Facilities at Parlin, N. J., for this purpose, have been purchased from the Defense Plant Corporation. This plant was formerly producing nitro-cellulose for the War, and will now be reconverted to the manufacture of cellulose acetate.

E. I. du Pont de Nemours Company: Construction work has been started on a new $2,500,000 unit of the Grasselli chemical division, at La Porte, near Houston, Texas. The unit will be designed for the manufacture of phenothiazine. Later expansion will accommodate the manufacture of fungicides, and agricultural insecticides.

Dow Chemical Company: Dr. Willard H. Dow, F.A.I.C., president, announces a $15,000,000 expansion in plastic production facilities. About $2,500,000 of this construction has been started. Within five years the company expects to produce 150,000,000 pounds of plastics a year. "Plastics are no longer laboratory curiosities, but are recognized industrial materials, the demand for which is in excess of the supply."

Shell Oil Company, New York: Construction of a $1,000,000 oil exploration and production research center in Houston, Texas, has been authorized. Dr. Harold Gershinowitz, research director of Shell's manufacturing department in New York, will be in charge of the new center. He will be assisted by Dr. M. King Hubbert, former lecturer in geology and geophysics at Columbia University. Research in physics, chemistry, and geology as they are related to petroleum exploration and production, will be conducted at the center.

Norwich Pharmacal Company, Norwich, New York: The incorporation of its subsidiary, Eaton Laboratories, Inc., has been announced. The research division of Eaton Laboratories consists of forty-five specialists, New pharmaceutical products will be created and marketed through ethical channels.

Recollections of Robert Brinton Harper

Edward A. Dieterle

Consulting Chemical Engineer, Chicago, Ill.

MEMORIES covering the entire professional life of Robert Brinton Harper, affectionately known as "Bob", crowd my mind as I think back to the time when he first started working for The Peoples Gas Light & Coke Company of Chicago, as an assistant chemist, and then on through the years as he rose to the position of chief chemist and chief testing engineer, and finally to that of vice-president in charge of research and testing, which position he held for many years until his death on August 29, 1945.

One bright sunny morning in the month of June, 1945, a bright alert young man, wearing a college cap perched on the back of his head, appeared at the Main Laboratory of the Gas Company to start as a chemist. Mr. John M. Morehead, chief chemist for the Company at that time, a loving technical father to many of us even to this day had called Dr. Pretzfeld, in charge of the laboratory, the day before to tell him of Harper's coming, so we were all expecting him.

I was an assistant chemist at the time, and I liked Bob the instant I saw him. Dr. Pretzfeld turned him over to me to break in on the laboratory routine work, and he was a most apt pupil with keen perception, not only quickly mastering the work, but soon suggesting improved methods of doing some of it. His spontaneous enthusiasm and joy in work, and his technical knowledge were then a vital part of his character and continued so through the years. The success that came to him was a natural result.

Together Bob Harper and I attended the first meeting of the American Institute in Chicago in 1906, and a souvenir of that meeting, a fine pair of Billings & Spencer Company pliers, given with the compliments of Mueller Manufacturing Co., Decatur, Illinois and New York City, to those attending, is still in my possession, having been used with appreciation to this day. I never happened to ask Bob what he did with his pair.

The next year we were attendants at the A. G. I. convention in Washington, D. C. and during our very interesting sojourn there we climbed

with verve to the top of the Washington Monument, surveying many of the stones with the names of their donors on the way up. Needless to say, despite youthful enthusiasm, we rode back down to the bottom of the monument in the elevator.

In 1909, during the Alaska-Yukon-Pacific Exposition in Seattle, Bob came to visit the Exposition, influenced to come, he said, because I was in Seattle where I was employed as chief chemist by the Seattle Gas Company. During one of our visits at the Lake Station Gas Plant on Lake Union, we observed a rather unique, but withall, amusing incident involving a quantity of coal gas which had been sold to a balloon concession company of the exposition. It was necessary for the concession people to come to the gas plant to get light coal gas since the City gas was a heavier mixed coal and water gas without sufficient lifting power for the balloon. The coal gas was collected at the gas plant in a large, cigar - shaped canvas bag holding several thousand cubic feet of gas, and we watched two men from the concession start to tow the bag up the lake, floating it along behind a rowboat. When they were at about the middle of the lake a sudden gust of wind caught the bag and it broke away from the boat and started rolling toward the opposite bank. In its path was another row boat with several people in it, and Bob and I were fearful that it might knock them out of the boat. But the bag rolled right along and over the people in the boat without seeming to disturb them and was later recaptured by the two men who finally got it safely to the exposition grounds.

Shortly before Bob left Seattle, I was with him when he first met the young lady (Mary Hathrill Parry), who had also been visiting in Seattle and who was destined, a few years later, to become Mrs. Harper.

In 1916 Bob and I attended the last annual convention of the American Gas Institute in Chicago.

There are memories of other meetings attended together through the years: The first annual convention of the newly formed American Gas Association in 1919, held in New York City. I was at that time with Koppers Company of Pittsburgh, and it was good again being with Bob at the convention.

Always, at any meeting, his thoughtful consideration of technical problems and his many interesting and enlightening technical papers and talks were a help and an inspiration as was widely acknowledged and attested to by the honors he was awarded.

It seems that the romantic beliefs of medieval alchemists must always enter somewhat into the inquiring technical mind, and it was so with that of Bob Harper and of his former chief, Mr. J. M. Morehead,

consulting engineer for Union Carbide & Carbon Corporation, whose father was one of the earlier developers of calcium carbide. Mr. Morehead had the vision, as others also have had, of producing synthetically from carbon, under proper conditions of heat and pressure, sparkling white diamonds of the first water. Bob became thoroughly imbued with the idea and together he and Mr. Morehead had many happy hours working on the problem. Results, successful to a degree, were achieved, as evidenced by specimens I have seen now, in Mr. Morehead's possession.

A matter of recent and more vital interest, not generally known, resulted from his work as chairman, Section on Blackout, Organization of Techniques, U. S. Office of Civilian Defense, Chicago Metropolitan Area. It was the design and building of an automatically operating model "Aerorama" (a new word coined by Mr. Harper) to simulate a view of a city and surrounding country-side from about 500 feet above it from an airplane. The model, which is located in the Museum of Science and Industry, operates on a cycle showing first a day-light view, then, as evening approaches and the daylight grows dim, the street lights come on and shortly afterwards an air raid warning is sounded and in a few minutes the city and country-side are blackout. Later when the "All clear" signal is sounded, the lights come on again.

Designing the model buildings in proper perspective from a given distance above was quite a task as may be imagined, but it was properly accomplished by painstaking effort on Bob's part.

His early, thorough work on protective coverings for underground pipes, his work on gas flames, water gas factors, etc. come to mind in connection with his many achievements.

Bob liked people and made friends readily wheresoever his duties took him. He obtained absolute loyalty and devotion from the men under him because of his kindness, consideration, outstanding technical ability, and his own loyalty to his company. He was unselfish in giving help along the way and was ever mindful for better positions for his men in other departments of the company. Many of the company officials and heads of departments had previously worked in the laboratory, and many prominent men now with other companies owe thanks for their efficient early training to their former chief, Robert Harper. Indeed, it has been a privilege for all to have been associated with so friendly, helpful, and lovable a person.

Mr Harper held membership in over a dozen technical organizations and was active on many committees in these, such as the American Gas

Association, the American Institute of Chemists, American Chemical Society, American Society for Testing Materials, American Institute of Chemical Engineers (Chairman Chicago Section 1932-34), American Standards Association, Illinois Engineering Council, and the Western Society of Engineers. He was a trustee of the Illinois Institute of Technology (formerly Armour Institute of Technology, his Alma Mater, from which he graduated in 1905, later, in 1909, receiving the degree of Chemical Engineer). He acted as trustee of the Institute of Gas Technology of which he was the incorporator (1941). Wide recognition of his achievements is shown and acknowledged by numerous honors awarded to him, among them being the Beal Gold Medal of the American Gas Association, the Walton Clark Gold Medal of the Franklin Institute, Distinguished Service Award as a Chemical Engineer, Alumni Association of Armour Institute of Technology, and more recently the Honor Scroll Award of the Chicago Chapter of the American Institute of Chemists.

We have all suffered a great loss in the passing of our much loved friend, Robert Brinton Harper, our dear Bob, and condolences are lovingly extended to his widow, Mary P. Harper.

Edgar Hugo Nollau

Edgar Hugo Nollau, chemical patent technologist of E. I. du Pont de Nemours and Company, Wilmington, Delaware, died May 8, 1945, at the age of fifty-four.

He was born in St. Louis, Missouri, and received the B.S. in chemistry from the University of Kentucky in 1914, after which he became assistant research chemist at the Kentucky Agricultural Experiment Station, followed by two years at the U. S. Department of Agriculture in Washington, D. C. as assistant editor of the *Experimental Station Record*. In 1918 he joined the E. I. du Pont de Nemours and Company, Wilmington, as research chemist. From then until the time of his death, he successively held the positions of division head, special investigator, area products supervisor, chemical superintendent, the latter three positions at the du Pont plant at Newburgh, N. Y. In 1933 he was again at Wilmington as staff assistant in the patent department.

Mr. Nollau was the author of a number of articles in technical journals and was a contributor to the 14th edition of the *Encyclopedia Britannica*. He held a number of patents, and specialized in the field of biochemistry and colloids.

He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1939.

D. F. J. Lynch

Mr. D. F. J. Lynch, chairman of the Louisiana Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, died on October 15, 1945, at the age of fifty-four at New Orleans, Louisiana, after a brief illness.

Mr. Lynch was a charter member of the Washington Chapter of the INSTITUTE and was chairman of that Chapter in 1931. He helped to organize, and become first chairman of the Louisiana Chapter in 1944.

Mr. Lynch was a native of Boston, Mass., and was graduated from Harvard University, receiving the B.A. degree in 1914, and the M.A. degree in 1915. He held LL.B. and LL.M. degrees from Georgetown Law School and was admitted to the District of Columbia Bar in 1923. He served as First Lieutenant in the Gas Warfare Service and in the Army Military Intelligence Service during World War I.

He was employed by the Bureau of Agricultural and Industrial Chemistry, formerly the Bureau of Chemistry and Soils, of the U. S. Department of Agriculture, since October, 1919. He did outstanding work on the utilization of agricultural farm wastes and brought to successful conclusions extended investigations relating to the manufacture of industrial alpha-cellulose from various agricultural wastes. In particular, Mr. Lynch developed the nitric acid pulping process for the production of alpha-cellulose from sugarcane bagasse which received world-wide attention. In 1934-35, he spent almost two years in the Territory of Hawaii where he supervised, in cooperation with the Maui Agricultural Company, the construction and operation of a pilot plant for the production of alpha-cellulose from bagasse using the nitric acid pulping process.

In 1935, Mr. Lynch took charge of the Agricultural Byproducts Laboratory at Ames, Iowa, where he continued work on the utilization of agricultural wastes. In 1938 he was named director of the Southern Regional Research Laboratory at New Orleans, Louisiana, established to investigate the industrial utilization of cotton, sweet potatoes, and peanuts. Here he used his executive ability to organize a smoothly running research unit with a personnel of more then three-hundred workers.

He was Fellow of THE AMERICAN INSTITUTE OF CHEMISTS since 1928, the American Chemical Society since 1929, and was a member of the Cosmos Club of Washington, D. C., The Harvard Club of New York, N. Y. and the Army and Navy Clubs of Washington, D. C. and New Orleans, Louisiana.

CHAPTERS

New York

Chairman, A. Lloyd Taylor *Vice-chairman,* Lloyd W. Davis

Secretary-treasurer, John J. Miskel

National Oil Products Company

Harrison, New Jersey

Council Representative, Elmore H. Northey

News Reporter to THE CHEMIST, Arthur De Castro

ON October 25th, Dr. H. De Wolf Smyth delivered a talk on atomic energy at a meeting of the New York Chapter.

Dr. Smyth reviewed, at quite some length, the fundamental principles of physics concerning the structure of the atom.

He also discussed the principles of atomic explosion and the research conducted during 1940-1945 leading up to the atomic bomb.

Concerning release of the atomic bomb to other nations, Dr. Smyth divided the so-called "atomic-bomb secret" into three categories:

(1) The fundamental scientific principles, which are known to all nations.

(2) Medical and scientific advancements arising from the bomb investigation, which should be released to all nations for the benefit of mankind.

(3) Technological developments closely allied with manufacture, which should not be given away.

It was the speaker's contention that the atomic bomb cannot be kept a secret indefinitely, as other nations are bound to get it in time; but he did emphasize that the secret of manufacturing should not be disclosed immediately. He recommended that we develop a strong foreign policy in order to avoid war in the future.

Dr. Smyth also discussed briefly the possibilities of utilizing atomic energy for constructive purposes.

There were about four-hundred and fifty guests present at the meeting.

At the conclusion of the meeting, the assembled chemists passed a resolution of congratulation to Dr. Donald B. Keyes, F.A.I.C., who was to be presented with the honorary scroll of the Chicago Chapter of THE AMERICAN INSTITUTE OF CHEMISTS on October 26th.

Miami Valley

Chairman, E. L. Luaces *Vice-chairman,* J. M. Purdy

Secretary-treasurer, John R. Fisher, Jr.
Chemical Developments Corporation
1771 Springfield Street, Dayton 3, Ohio

Council Representative, Harvey G. Kittredge

AN extremely interesting talk was presented on October eleventh by Arthur Schroder, the executive director of THE AMERICAN INSTITUTE OF CHEMISTS. His subject, "Why Should Chemists Be Licensed?", was very much in accord with the views of Ohio Chemists whose activities have brought forth the Ohio C_2P_2.

Mr. Schroder pointed out that the licensing of the chemist not only would serve to professionalize the chemist but would afford greater protection to the general public. According to the Roster of Scientific and Specialized Personnel, one out of every seven persons claiming to be a chemist is inadequately prepared to serve in this capacity. Licensing would prevent such tragic disasters as the "Elixir Sulfanilamide-Massengill" which occured some years ago and membership in a scientific society did not prevent.

Licensing would tend to establish professional recognition. The chemist cannot give the best service of which he is capable under any system which regiments his life or his work. He must be given every chance to use his initiative, imagination, and ability. Such freedom is impossible under union jurisdiction. Licensing would not prevent unionization but would establish professional recognition and give the chemist a legal right to pursue his professional interests unhampered.

The meeting was followed by much useful and interesting discussion.

Pennsylvania

Chairman, Harold A. Heiligman *Vice-chairman,* Harold M. Olson

Secretary-treasurer, Kenneth E. Shull
Philadelphia Suburban Water Company
762 Lancaster Avenue, Bryn Mawr, Penna.

Council Representative, John M. McIlvain

THE first meeting of the 1945-46 season was held October second, at the Engineers' Club, with Mr. Harold Heiligman, chairman, presiding. An informal dinner preceded the meeting.

The speaker of the evening was Mr. Arthur Schroder, executive di-

rector of the A.I.C. His topic, "What the INSTITUTE is doing for the Chemist", proved quite interesting to the assembled members.

Mr. Schroder opened his talk by stressing the need of the Institute for an increase in membership and advertising in the CHEMIST. As an added inducement, the INSTITUTE is to return to each chapter one-half the dues paid by each new member until May 1, 1946.

Mr. Schroder stated that the patent system is being discussed with the possible view of its betterment.

The subject of licensing was next considered. The Illinois Bill will be re-introduced at the next session of the legislature. Licensing activity has been started or is about to start in several other states.

Several sections of the technical societies have expressed the belief that licensing by the state is the means of gaining professional status for the chemist.

A serious threat to the chemist's professional dignity is the encroachment of labor unions on his field of activity. According to the Wagner Act and the National Labor Relations Board rulings, it is legally necessary to set up organizations which can function as the required bargaining agents in all controversies involving labor relations. Because the chemist has not been organized for such activities, because of the non-recognition of the professional status of chemists, because of the lack of legal definitions of chemist and chemical technician, and because of the activities of the labor unions, it has frequently been impossible for chemists to stay out of unions in completely unionized plants. The A.I.C. has been studying this problem in an effort to help set up organizations which truly represent the interests of chemists and which are immune to coercion from non-chemical groups.

In addition to supporting legislation favorable to the interests of the chemist, the INSTITUTE has been active in protecting him from harmful measures. Along these lines, it is urged that each section form a legislative committee to contact congressmen.

After a discussion period the meeting was adjourned.

—John H. Staub

Chester A. Snell Joins Foster D. Snell, Inc.

Chester A. Snell, F.A.I.C., has joined the staff of Foster D. Snell, Inc., consulting chemists and engineers, Brooklyn, N. Y. For the past three years, Dr. Snell has been connected with the Chemical Development Division, Aluminum Company of America, East St. Louis, Illinois. Dr. Snell has also rejoined the evening school staff of the Polytechnic Institute of Brooklyn.

A Plot to Enslave Science

E. F. Tompkins

Reprinted from the
New York Journal-American

It would be strange indeed if this free country, with its immense resources and with a just appreciation of the accomplishments of its scientific men and institutions, should permit politicians and socialistic "economic planners" to enchain science in America.

Yet that is what will happen unless Americans beware; for the first step has been taken in the presentation of a bill in Congress.

This bill was introduced in its latest form on July 23 by Senator Kilgore, one of the Democratic group which is sponsoring socialistic legislation at Washington.

It would establish in the federal government an "independent agency" to be known as the "National Science Foundation."

The "foundation" should take jurisdiction over all scientific work carried on in any department of the government, including the War and Navy Departments.

But the Kilgore bill also ranges far beyond the government.

It would empower the "director" of the "foundation" to "utilize" the "facilities and resources" of "private organizations."

Under the formulae of protecting the public health and promoting the national defense, every industrial research establishment could be impressed into line.

To support its activities and augment its power, the "foundation" would receive from Congress unestimated appropriations of "such sums as may be necessary."

In addition, this "agency" of the federal government could "solicit and receive financial grants" outside the government.

Out of the funds it could bestow scholarships and fellowships, and hire an unlimited number of employes.

At least half of the congressional allotments would be used for "engaging the facilities" of "non-profit educational institutions and research institutions."

This use of money would be subsidies—and federal subsidies would mean federal control of scientific education and research.

Moreover, any institution, firm or person "co-operating" with the "foundation" must agree that "any invention, discovery or finding resulting" would become "the property of the United States" and be patented by the government.

The patent system, which was founded by Congress under the Constitution to "promote the progress of science and useful arts," and which has been a predominant factor in our national progress, would thus be largely nullified.

Significantly, among the opponents of an overspreading federal bureau-

cracy are such men in the field of "pure science" as Dr. James B. Conant, president of Harvard University, who helped Mr. Bernard M. Baruch to solve the synthetic rubber problem, and Dr. Karl T. Compton, president of the Massachusetts Institute of Technology; and in "applied science," such "industrialists" as Mr. Oliver T. Buckley, president of the Bell Telephone Laboratories, where many of our "secret weapons" were devised.

The truth is that no concentrated control can "direct" science in this vast country—except downward.

Scientific research has existed in our universities for decades.

Today no human mind can comprehend it all.

Political interference would simply demoralize it.

The first industrial research laboratory was founded at General Electric Company in 1900.

Forty years later—in 1940—there were 2,300 research laboratories in industry, employing more than 70,000 scientists.

Today industry is putting many millions of dollars into vast new research undertakings in "applied science," and institutions of medicine and learning are charting new paths in the vast realm of "pure science."

And the Kilgore bill would put a fumbling federal bureaucracy over all that!

An acute summary of the Kilgore bill was made in November, 1943, when a wartime version of the bill had appeared in Congress for the Commerce and Industry Association in New York City.

A committee of well-qualified inquirers said:

"It is abundantly clear that the Kilgore bill seeks to create a political mechanism which could drastically change the economic character of the United States.

"We reject its false premises and denounce its concealed purpose to socialize, or collectivize, scientific research, development and technical service."

Turner with Florida Chemical

William D. Turner, F.A.I.C., of the Department of Chemical Engineering, Columbia University, has resigned as of June 30, 1946, to devote his time to chemical engineering consultation work, principally in connection with the Florida Chemical Research Corporation, 235 East 47th Street, New York 17, N. Y., and Sarasota, Florida. He has been granted a leave of absence for the academic year 1945-46.

Gans Now Technical Director

David M. Gans, F. A. I. C., has been appointed technical director of Quaker Chemical Products Corporation, Conshohocken, Penna. His duties include the supervision of Quaker's Research, Service and Control Laboratories.

For Your Library

HANDBOOK OF DESCRIPTIONS OF SPECIALIZED FIELDS IN CHEMISTRY AND CHEMICAL ENGINEERING. Prepared by the National Roster of Scientific and Specialized Personnel. 6″ x 9″. 130 pp. The Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $0.30

The National Roster has been preparing occupational material for the use of staff members of the U. S. Employment Service. The Handbook, occupational briefs, and folders in chemistry and chemical engineering are now being printed for public distribution at a nominal charge. The folders (5″ x 7″ on cardboard) may be ordered from the National Roster of Scientific and Specialized Personnel, 1006 U Street, N. W. Washington 25, D. C. without charge. The price of the Handbook is thirty cents and should be ordered from the Superintendent of Documents.

The handbook describes the typical activities of technical personnel in the various fields of chemistry and chemical engineering, thus filling a need for information of this type. The book will be valuable to students, employers, personnel directors, vocational counsellors, and others who want occupational information on these subjects.

CANE SUGAR HANDBOOK. Eighth edition, revised, rewritten and enlarged. Guilford L. Spencer and George P. Meade. *John Wiley and Sons.* 834 pp. 5 7/8″ x 8 5/8″. $7.50.

This well-known book has been expanded from 560 pages of the previous edition to 834 pages of the present one. Most of the descriptive material on processes and equipment appears to be new. Among the forty-one chapters one finds a great variety of subjects such as Economic phases, Raw material, Plant procedures, and Chemical and Physical analytical methods. All is covered in considerable detail.

In its present enlarged and modernized form, the book will well-qualify as the encyclopedia of cane sugar. It should prove profitable to anyone interested in industrial chemistry.

— H. Tauber, F.A.I.C.

Polytechnic Institute of Brooklyn is offering four graduate courses dealing exclusively with scientific and technical instruments. The two fall courses are, "Principles of Electronics" and "Instrumentation". The two spring courses are, "Industrial Application of Instruments" and "Servomechanisms".

Alfrey Joins Polytechnic Staff

Raymond E. Kirk, F.A.I.C., dean of the Graduate School and head of the Department of Chemistry of the Polytechnic Institute of Brooklyn, announces that Dr. Turner Alfrey, formerly research chemist of Monsanto Chemical Company, at Springfield, Mass., has joined the staff of the Highpolymer Research Bureau of Polytechnic to teach specialized courses in polymer chemistry and to engage in fundamental research in this field.

Consulting Chemists and Chemical Engineers Elect

The Association of Consulting Chemists and Chemical Engineers, Inc., New York, N. Y., elected the following officers and councilors on October 23rd: President, Albert Parsons Sachs, F.A.I.C., consulting chemical engineer, New York, N. Y.; Vice president, Henry M. Shields, partner, Bull and Roberts, New York, N. Y.; Secretary, Claude F. Davis, chief chemist, Schwartz Laboratories, New York, N. Y.; Treasurer, Sam Tour, Sam Tour and Company, New York, N. Y., and Councilors, Percy E. Landolt, F.A.I.C., chemical engineer, New York, N. Y.; Roger W. Truesdail, F.A.I.C., president, Truesdail Laboratories, Inc., Los Angeles, Calif.; and John M. Weiss, F.A.I.C., consultant, New York, N. Y.

Fellowships for Nutrition Research

Standard Brands, Inc., New York, N. Y., have offered fellowship awards to ten American universities for post-graduate studies in food and nutrition in a five-year educational program. The awards will go to graduates with high scholastic records who plan to study for post-graduate degrees in organic chemistry, chemical engineering, biochemistry, and microbiology, and are designed to encourage those of scientific ability to enter the field of food and nutrition research. The universities to which the grants have been offered are: Cornell, Harvard, Indiana, Pittsburgh, Princeton, Rutgers, Stanford, Wisconsin, Yale, and Massachusetts Institute of Technology.

Bertolet with Laurel Soap

Elmer C. Bertolet, F.A.I.C., became technical director of Laurel Soap Manufacturing Company, Inc., Philadelphia, Penna., as of October first. He was formerly head of the Department of Chemistry and Dyeing of the Philadelphia Textile Institute. During the war, he was senior technologist in the Textile Section of the Jeffersonville Quartermaster Depot, Jeffersonville, Indiana, where he carried on research on mildew treatments and special textile finishes.

General Motors Appoints Staff

General Motors Corporation announces the nucleus of a general administrative staff for the projected General Motors Technical Center. Heading the list of appointments is W. J. Davidson, as administrative engineer, who has been associated with the project since its inception. Col. A. J. Schamehorn, will be assistant administrative engineer. They will have supervision over the construction, equipment, and maintenance of the Technical Center. The operation of buildings housing the research laboratories, process development, and styling sections, will be the responsibility of vice-presidents C. F. Kettering, B. D. Kunkle and H. J. Earle.

Friedman with Reyam Plastic

Bernard S. Friedman, F.A.I.C., is now director of research and development for the Reyam Plastic Products Company, Chicago, Illinois. Dr. Friedman was previously associated with the Universal Oil Products Company of Riverside, Illinois.

Nobel Prize to Penicillin Discoverer

The 1945 Nobel Prize for physiology and medicine was awarded jointly to Sir Alexander Fleming, discoverer of penicillin, and to Dr. Ernest Boris Chain, and Sir Howard Walter Florey, co-workers in penicillin research, at Oxford University.

Optical Glass Substitutes

Plastic and synthetic fluorite optical lenses, prisms, and mirrors, developed as substitutes for the glass elements in gunsights, cameras, etc., are described in a thirteen-page report on the work done at Harvard University by the National Defense Research Committee and the Polaroid Corporation. This is released by O.S.R.D. through the office of the Publications Board of the U. S. Department of Commerce, Washington 25, D. C. Copies may be obtained by writing the Board for Release No. OPB-31.

Life Insurance Medical Research Fund

One hundred and forty-three life insurance companies in the United States and Canada have organized the Life Insurance Medical Research Fund, to which contributions will average $578,000 a year for research in the medical field. The first project will be research into heart and arterial diseases. The allocation of funds will be in charge of a board of medical men representing the medical schools of leading universities.

In a booklet entitled "California's Post-War Employment Problem," by Harrison S. Robinson, president of the California State Chamber of Commerce, Agriculture, and Industry, San Francisco, appears the following:

"There is need on the Pacific Coast for research and other laboratories at which the smaller manufacturers can get first-rate service at prices within their means. Small manufacturers can have only occasional use for highly technical assistance and are at a great disadvantage compared with very large manufacturers, each of whom may spend a million dollars a year in technical work having no immediate productive value. For the Western manufacturer, there are no facilities of this sort such as are available to the manufacturer on the Atlantic Coast and, to a lesser degree, in the middle west."

Harvard Promotes Physical Research

Harvard University has appropriated $425,000 for research in nuclear physics. The Harvard cyclotron is being recalled from Los Alamos, New Mexico, where it was used in connection with Manhattan Project for the atomic bomb. Dean Paul H. Buck, provost of Harvard, will head the new committee of representatives in allied fields of scientific research.

Award for Enzyme Research

The Paul-Lewis Laboratories, Inc., of Milwaukee, Wisconsin, has established an annual award for outstanding work in the field of enzymes. The American Chemical Society will administer the award, which consists of $1,000 and a bronze medal. The recipient must be under thirty-six and shall have accomplished outstanding research in enzyme chemistry. Nominations are limited to non-commercial chemists. J. J. Willaman of the Eastern Regional Research Laboratory of the Department of Agriculture is chairman of the Canvassing Committee,

---

Dr. L. H. Flett, F.A.I.C., director of the New Products Division of National Aniline Division of Allied Chemical and Dye Corporation, will speak before a meeting of The Niagara Chapter of The American Institute of Chemists on December fourth. His subject is "Post War Problems in Efficiency of Chemical Research."

Meeting Dates

Dec. 4. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club. Philadelphia. Speaker: Walter J. Baeza, consultant, Industrial Research Company. "Powder Metallurgy".

Dec. 6 or 12. Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Speaker, Bruce K. Brown of Standard Oil of Indiana. "Research, Industry, and Government".

Jan, (date to be announced). Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Joint meeting with American Chemical Society and Society of Professional Engineers. Speaker, Walter Graff. "Engineers' Law".

Feb. 5. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club. Philadelphia. Speaker: Commander Aubry H. Hamilton, USN, "Control of Tropical Diseases."

Feb. 10. Chicago Chapter, THE AMERICAN INSTITUTE OF CHEMISTS. Huyler's Restaurant, 310 South Michigan Avenue, Chicago. Dinner 6 p.m. followed by meeting.

Mar. (date to be announced). Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Meeting in Cincinnati. Chapter Award. Speaker, Gustav Egloff.

Mar. 5. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club. Philadelphia. Speaker: Dr. Gerald P. Wendt, science editor, *Life* and *Time* magazines, "World Wide Chemistry".

Mar. 30. Chicago Chapter, THE AMERICAN INSTITUTE OF CHEMISTS. Huyler's Restaurant, 310 South Michigan Avenue, Chicago. Dinner 6 p.m. followed by meeting.

Apr. (date to be announced). Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Meeting in Columbus. Speaker, G. F. Deeble. "The Chemists' World".

Apr. 2. Pennsylvania Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Engineers' Club. Philadelphia. Speaker: Walter J. Murphy, editor, *Industrial and Engineering Chemistry*. "The Chemist as Demobilized from the Armed Forces."

May (date to be announced) Plant trip.

June (date to be announced). Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Student Medals presented to outstanding chemistry students in area.

June 1. Chicago Chapter, THE AMERICAN INSTITUTE OF CHEMISTS. Huyler's Restaurant, 310 South Michigan Avenue, Chicago. Dinner 6 p.m. followed by meeting.

The American Ceramic Society, Inc., Columbus, Ohio, announces that their 48th annual meeting will be held April 28th to May 1st, 1946, at the Hotel Statler in Buffalo.

Chemists Available

Laboratory manager, coordinator of laboratories, or supervisor of analytical department. F.A.I.C. Efficient, loyal, energetic, progressive, stable. Desires position at $5000 per year with possibility for advancement. Please reply to Box 124, THE CHEMIST.

Technical Information Specialist. F.A.I.C., B.U.E., M.S. Experience organic chemicals, solvents, distillation, petroleum, chlorination, research and development, market research, literature, reports, patents. Natural aptitude for obtaining information of value from present flood of technical literature, from technical society meetings, or by personal contact. Creative mind with ability to suggest valuable and practical ideas. Please advise nature of business, location, and type of work. Please reply to Box 126, THE CHEMIST.

Chemist, F.A.I.C., Former captain. Ten years experience analytical, organic chemistry, and technical writing. Desires position. Please reply to Box 120, THE CHEMIST.

Chemist-Chemical Engineer: M.A. chemistry; B.S. chemical engineering, Phi Lambda Upsilon, F.A.I.C. Fifteen years' experience in organic research, analytical work, and research and development in chemical engineering field. Some supervisory and extensive technical report writing experience. Desires permanent research or development position with future in progressive industrial organization. Now employed, present salary $5200. Please reply to Box 122 The Chemist.

Research Director, Ph.D., F.A.I.C., seeking new position of first grade responsibility offers twenty years diversified experience in the fields of heavy and fine chemicals and specialties, comprising responsibility for all phases of research and development, including pilot plant to full scale production and sales-service. Wide knowledge of industrial needs. Successful completion of many projects in fields of detergents, textiles, metal processing, foods, solvents, surface active agents, inhibitors, germicides, soaps, cosmetics, etc. Energetic, engineering ability, initiative, proven organizer and leader. Location unimportant. Please reply to Box 128, THE CHEMIST.

Chemical Condensates

Ed. F. Degering, F. A. I. C.

Merck and Company have announced plans for the constuction of a plant at Elkton, Virginia, for the manufacture of the antibiotic streptomycin, which is effective against a wide range of infectious organisms which are not inhibited by penicillin.

"Research" according to Kettering, "is the process of making mistakes intelligently and learning from your mistakes."

The waste from a commercial oil deodorizer, according to K. Hickman of Distillation Products Company, contained three per cent of vitamin E, which is thirty to one-hundred times as much as is found in the richest commonly available oils.

According to Dr. C. M. A. Stine, "Already our world of 1940, in which we took such pardonable if mistaken pride, is so distant in the past that it has become antiquity, as seen through scientific eyes."

"Technology has set so fast a pace in plastics of every description that spokesmen for the industry believe civilian applications will enable it to maintain production and employment at present levels."

A styrene plant is to be built near Sarnia, Ontario, by Dow Chemical Company of Canada.

The Pennsylvania Grade Crude Oil Association has initiated research on the actual or potential role of bacteria in petroleum production operations.

For centuries after Columbus imported rubber to Europe, the commodity was known as Caoutchouc, a South American Indian word meaning "weeping tree".

During 1944, General Electric paid its employees $232,375 for 19,488 suggested improvements which resulted in increased efficiency.

Gamma-(p-arsenophenyl) butyric acid, according to Dr. Harry Eagle of the U. S. Public Health Service and Johns Hopkins University, is effective in treating African sleeping sickness in the early stages of the disease.

Turbidimeters, which employ the scattering of light to learn the size, shape, and weight of large molecules, have been developed at the Polytechnic Institute of Brooklyn.

A Yuletide Prayer

1945

Prometheus, friend of man, brought heavenly fire.
To kindle hearth and beacon, forge and pyre.
Many his gift for evil uses take —
For war and arson, burnings at the stake.

Revealing Science now the key has gained
To loose primordial force in atoms chained.
Tremendous power, the heartbeat of the world —
Or else destruction's bomb on humans hurled.

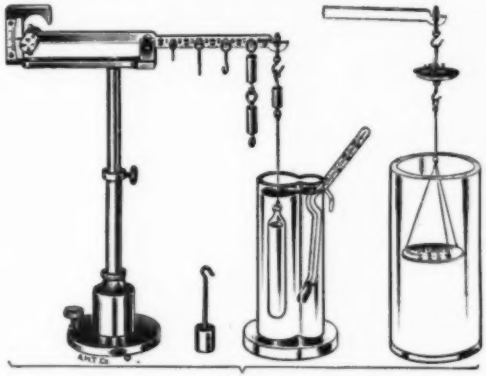
Lord, grant that peoples and their leaders see
The greatest good for all humanity.
And use what Science brings into our ken
To hasten peace on earth, good will towards men.

— *Jerome Alexander, F.A.I.C.*

PRECISION TYPE

SPECIFIC GRAVITY BALANCE

FOR BOTH LIQUIDS AND SOLIDS



1954.

BALANCE, SPECIFIC GRAVITY, PRECISION, for both liquids and solids. This is a superior balance, reading definitely to the fourth decimal place up to 2.1 with an accuracy within ± 0.0001. Planes are of agate, with central and lateral knife edges of tempered steel; in addition, the beam is furnished with nine tempered steel knife edges, each numbered for suspension of rider weights with accurate and reproducible placement.

Equipment for liquids consists of Rumann plummet with an absolute weight of 32 grams, displacing 10 grams of distilled water at 15° C; double compartment glass jar, 150 mm high; thermometer, range 0 to 30° C in 1° divisions, with bent stem and hook for convenient hanging in the slot on the side of the jar; set of five rider weights, two of 10 grams and one each of 1.00, 0.10 and 0.01 gram; and Rumann counterpoise, weight 32 grams, for adjustment of the equilibrium position of the balance without the plummet.

Equipment for solids consists of perforated glass pan, with platinum suspension wires; cylindrical glass jar, 160 X 80 mm; and nickel plated platform for weights, but does not include the analytical balance weights shown in illustration.

1954. **Balance, Specific Gravity, Precision,** as above described, complete with equipment for both liquids and solids, in polished hardwood case, with detailed directions for use.....**65.00**

1954-A. **Ditto,** but for liquids only, i.e. without perforated glass pan with platinum suspension wires, glass jar 160 X 80 mm, or platform for weights. In hardwood case **57.85**

ARTHUR H. THOMAS COMPANY

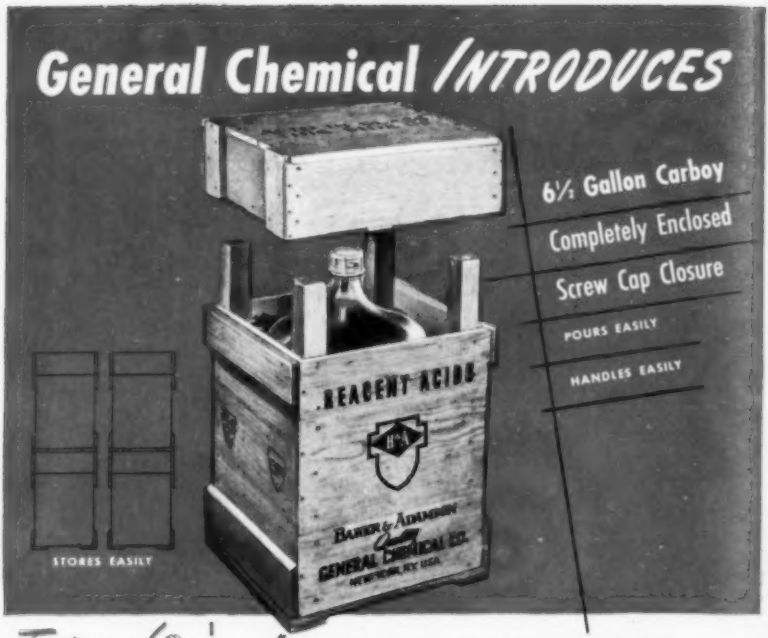
RETAIL—WHOLESALE—EXPORT

LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE PHILADELPHIA 5, PA., U. S. A.

Cable Address "Balance" Philadelphia

General Chemical INTRODUCES



Featuring!

"ONE-MAN" PACKAGE

"PURITY SEAL" COVER

POUR-CLEAN LIP

SCREW-CAP CLOSURE

SAVES STORAGE SPACE

CLEAR VIEW OF CONTENTS

EXTRA STRENGTH BOTTLE

RESISTANT COATING

Write today for folder describing features of this carboy and what they mean to you as a user of reagent acids.

"THE CARBOY OF TOMORROW" Today!

For B & A Reagent Acids and Ammonia

Chemical packaging makes a significant advancement with the advent of the new 6½ gallon, screw-cap, completely boxed carboy . . . and General Chemical Company leads the way by offering the advantages of this superior modern container to users of its Baker & Adamson C.P. Reagent Acids and Ammonia.

Here is a carboy that protects the high purity of B&A products and safeguards their Reagent, A.C.S. quality even under adverse conditions. Note how its special features provide an ease of handling and storage impossible with ordinary carboys.

These are advantages industrial users of reagent acids, laboratories, colleges and others will welcome as the answer to their special requirements. You will want them, too. . . . For full information about B&A Reagent A.C.S. Acids and Ammonia in this new carboy, contact nearest Technical Service Office below.

Setting the Pace in Chemical Purity Since 1882

B·A STANDARD OF PURITY

BAKER & ADAMSON Reagent and Fine Chemicals

Division of GENERAL CHEMICAL COMPANY, 40 Rector St., New York 6, N.Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.